

# Darfur Stove Carbon Credit Project



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# Outline

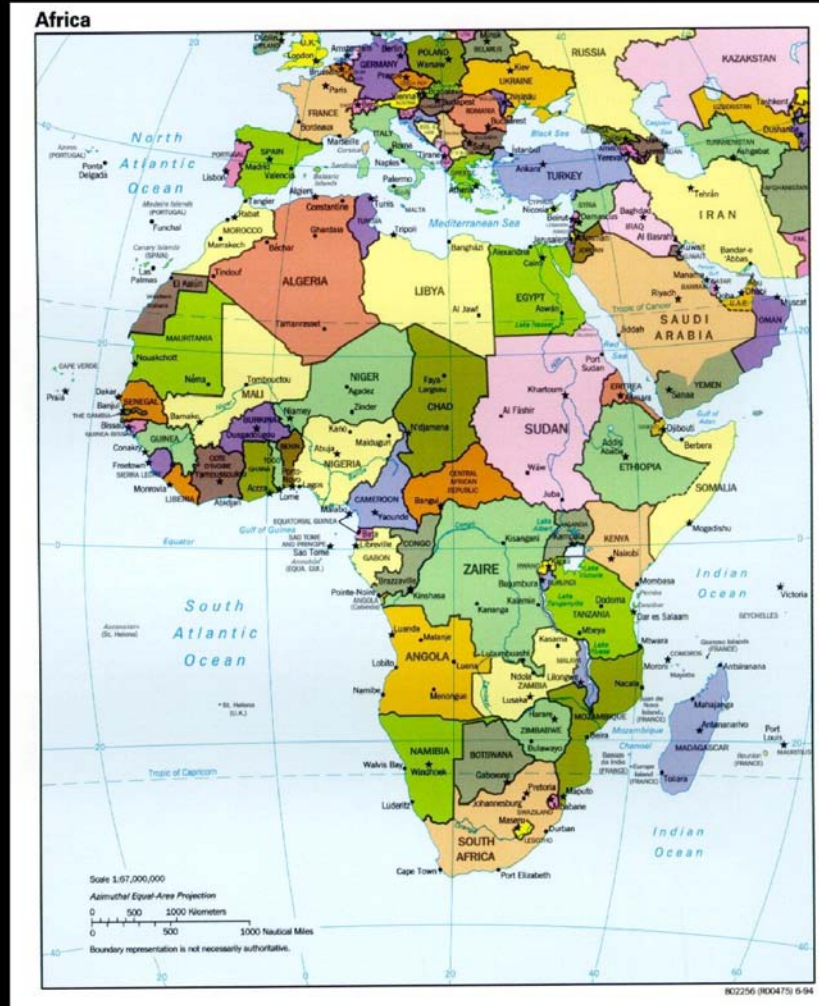
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- Background and Context
- Carbon Markets
- Methodology
- Goals
- Challenges
- Accomplishments
- Next Steps





# Background





# Background

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Otash IDP camp Nov. 2005

# Background

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# Background

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# Background

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- Hunger
  - 50% (South Darfur) - 90% (North Darfur) of families missing meals for lack of fuel.
  - In SD, 38% of women reported selling food rations for fuelwood. In ND, that number rises to 80%.
- Health
  - Many shrubs used as fuel release toxic smoke.
- Environmental Degradation
  - Over harvesting has caused mass deforestation around the camps.
- Gender-Based Violence
  - Women harvesting fuel wood exposed to rape and mutilation.



# Background

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90% of households in Darfur use 3-stone fire.  
Berkeley-Darfur Stove uses 70% less fuel wood.

- Hunger
  - Saves \$160 per year.
- Health
  - Stove decreases airborne particulates.
- Environmental Degradation
  - Reduction of 2.1 tons CO<sub>2</sub>e/stove/year.
  - Saves 345 million kg fuelwood per year.
- Gender-Based Violence
  - Less trips means less exposure to abuse and rape for women collecting fuelwood.





# Background



- Goal: Finance 300,000 improved stoves by selling carbon-offset credits on the carbon market



# Background



- \$30 to manufacture stove in Khartoum.
- Total cost: \$9 million.
- Minimum carbon credit potential: \$11 million.





# Carbon Markets

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The Kyoto Protocol created carbon markets in which the right to emit carbon dioxide equivalent (CO<sub>2</sub>e) can be bought and sold.

- Mandatory
- Contractual
- Voluntary



# Carbon Markets

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- Mandatory: Kyoto Protocol Annex 1 Countries
  - European Carbon Exchange (ECX)
    - Not project based
    - Cannot be used to fund development projects
  - Clean Development Mechanism (CDM)
    - Can fund development projects to meet their targets
    - Buyers include Annex 1 countries, World Bank, and private corporations
    - Higher carbon prices, but process is long, and projects that work with NRB are currently not included.





# Carbon Markets

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- Contractual: Some private companies and regions of the United States are creating their own binding emissions targets and markets to trade credits.
  - Chicago Climate Exchange (CCX)
    - Companies agree to binding caps.
    - Development projects may sell credits but no currently accepted methodology.
    - Process more streamlined than CDM.



# Carbon Markets

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- Voluntary: Corporations, individuals, and aggregators buy carbon credits
  - Some aggregators operate through CCX
  - Lots of variation
  - More flexible and may reward social aspects
  - Making contact with willing buyers may be more difficult
  - Prices tend to be lower





# Carbon Markets

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- Barriers
  - Concerns about leakage and incentives for deforestation led to removal of CDM protocol for small-scale non-renewable biomass (NRB) projects
  - No accepted methodology for projects that reduce the use of NRB



# Methodology

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- Methodology includes both how to account for carbon emissions as well as monitor and verify that they occurred.



# Methodology

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- Difficulties for development projects
  - Most are small-scale and deal with NRB.
  - Must have a streamlined methodology to reduce high transaction costs.
- 80% of CDM projects are located in India, China, and Brazil and are mostly industrial





# Methodology

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- Difficulties faced by stove projects
- Multiple and dispersed sources
- Need for low-cost monitoring determines what is included in methodology
  - Include products of incomplete combustion (PICs) vs only amount of fuel wood
- Potential for leakage is highly contested



# Methodology

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- Applying World Bank Methodology
  - Being developed for submission to United Nations Framework Convention on Climate Change (UNFCCC)
  - Our numbers vs their standard numbers



# Methodology

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- Carbon Monitoring
  - Must demonstrate what portion of biomass is harvested unsustainably
  - Household surveys needed to assess levels of fuel wood usage prior to and following stove adoption





# Assessment

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- Rejected
  - CDM: cost, time, and need for government cooperation
  - European Carbon Market: not an option
- Concerned about PG&E's timescale, level of investment, and commitment to CA based projects.
  - However, involving a utility in a GHG reduction project like this with significant social benefits may open the door for other utilities who are looking for carbon-offset projects
- Planning to pursue contractual and voluntary markets



# Parallel Efforts

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- CHF International
  - Submitted Project Identification Note (PIN) to the World Bank
  - Considering foundations
- Robert Van Buskirk
  - Found buyers for similar project in Eritrea
  - Concerned that we cannot follow the same format, but we may be able to access similar buyers on the voluntary market



# Goals

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- Minimal
  - Research, develop, and pitch carbon trading program to PG&E ☒
  - Identify alternative funding sources ☒
- Optimal
  - Find funding
  - Contribute to establishment of carbon market that finances world development programs





# Challenges

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- Market Uncertainty
  - No approved methodology.
  - Avoided deforestation.
  - Monitoring and verification procedures for small scale non-renewable biomass projects.
- Alignment of all necessary people / paperwork
  - Coordination of multiple actors.
- Stoves not being used (as of 4/12/07)
  - Redesign and new training protocol needed.



# Revised Approach

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- Focus on the voluntary market
  - Climate Care, Chicago Climate Exchange, PG&E, others.
- Establishing carbon market template for other small scale biomass projects.
  - Mandatory and voluntary



# Accomplishments

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- Methodology
  - Used by CHF International in World Bank application
- Pitch
  - Letter and presentation
  - Interest from PG&E, Dow Chemical, World Bank
- Project Design Document
  - Identified needs for monitoring and verification procedure for stove rollout
  - Protocol for other development projects
- Project binder for future groups
- Communication / network





# Next Steps

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- Bears Breaking Boundaries (?)
- Complete protocol for other development projects to help access carbon credit funding
- Kayje and Rey continuing project over the summer
- Engineers Without Borders fundraising event
- Pitching to identified targets
  - PG&E, Shell, Dow, Climate Care, others.



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# Questions?

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